

We Claim:

1. An optical network terminal (ONT) for providing communication services to a single residential unit, comprising:

5 a passive optical network interface (PI) circuit that receives optical signals from an optical fiber and that transmits optical signals onto the optical fiber, the PI circuit being adapted to convert received optical signals containing voice information to electrical voice ATM cells, received optical signals containing data information to electrical data ATM cells, and received optical signals containing video signals to 10 electrical video signals, the PI circuit also being adapted to convert electrical voice ATM cells and electrical data ATM cells to optical signals for transmission over the optical fiber;

a residential service interface (RSI) circuit that is adapted to convert the electrical voice ATM cells to a telephony format suitable for use at the residential unit and the 15 electrical data ATM cells to a data network format suitable for use at the residential unit, the RSI circuit also being adapted to convert telephony format information received from the residential unit to voice ATM cells and data network format information received from the residential unit to data ATM cells; and

a power unit for providing power for use in the PI circuit and the RSI circuit, the 20 power unit including an ac/dc converter for converting ac power received from the residential unit to dc power for use in the ONT and backup batteries for providing power when there is an interruption of the ac power.

2. The ONT according to claim 1 wherein the telephony format is compatible for transmission via a POTS interface.

3. The ONT according to claim 1 wherein the telephony format is compatible for transmission via an ISDN interface.
4. The ONT according to claim 1 wherein the network format is compatible for transmission via an Ethernet interface.
5. 5. The ONT according to claim 4 wherein the Ethernet interface is either a 10 base T interface, a 100 base T interface, or a 10/100 base T interface.
6. The ONT according to claim 1 wherein the backup batteries comprise C cell or D cell batteries.
7. The ONT according to claim 6 wherein the backup batteries comprise disposable batteries.
8. The ONT according to claim 6 wherein the backup batteries comprise rechargeable batteries.
9. The ONT according to claim 1 further comprising:
 - an electrical protector circuit that reduces the likelihood of components of the PI circuit and the RSI circuit being damaged by electrical hazards; and
 - a plurality of electrical terminals that provide a connection point for telephony lines that transport telephony format information between the ONT and the residential unit, a connection point for network lines that transport network format information between the ONT and the residential unit, and a connection point for video cables that transport video information to the residential unit.
10. The ONT according to claim 1 further comprising up to four telephony interfaces, one 10/100Base-T Ethernet interface, and one or two video interfaces.

11. The ONT according to claim 10 wherein each telephony interface comprises a POTS interface.

12. The ONT according to claim 10 wherein each telephony interface comprises an ISDN interface.

5 13. The ONT according to claim 10 wherein the video interface comprises a CATV interface.

14. The ONT according to claim 10 wherein the video interface comprises a DBS interface.

15. An ONT for deployment in an optical network comprising an Optical Line Terminal (OLT), a head-in-gateway (HEG), and a plurality of passive optical networks (PONs), the OLT comprising an interface for exchanging ATM traffic with an ATM network, an interface for exchanging traffic with a HEG, and a plurality of interfaces for exchanging information with a plurality of PONs, the HEG comprising an interface for exchanging voice traffic with a voice public switched telephone network (PSTN), the plurality of the PONs comprising a splitter WDM Cross-Connect and a plurality of optical splitters, the splitter WDM cross-connects comprising an interface for exchanging information with the OLT, an interface for receiving video information from a video network, and an interface for exchanging voice and data information with and for transmitting video information to at least one of the optical splitters, the optical splitters comprising a plurality of optical splitter modules for exchanging optical signals with a plurality of ONTs, the ONT comprising:

a passive optical network interface (PI) circuit that receives optical signals from and transmits optical signals to an optical fiber coupled to an optical splitter module, the

PI circuit being adapted to convert received optical signals to electrical voice ATM cells, electrical data ATM cells, and electrical video signals, the PI circuit also being adapted to convert electrical ATM cells to optical signals for transmission over the optical fiber;

5 a residential service interface (RSI) circuit that is adapted to convert the electrical voice ATM cells to a residential use telephony format and the electrical data ATM cells to a residential use data network format, the RSI circuit also being adapted to convert telephony format information received from the residential unit to voice ATM cells and data network format information received from the residential unit to data ATM cells;

and

10 a power unit for providing power for use in the PI circuit and the RSI circuit, the power unit including an ac/dc converter for converting ac power received from the residential unit to dc power for use in the ONT and backup batteries for providing power when there is an interruption of the ac power.

16. The ONT according to claim 15 further comprising up to four telephony

15 interfaces, one 10/100Base-T Ethernet interface, and one or two video interfaces.

17. The ONT according to claim 16 wherein each telephony interface comprises a POTS interface.

18. The ONT according to claim 16 wherein each telephony interface comprises an ISDN interface.

20 19. The ONT according to claim 16 wherein the video interface comprises a CATV interface.

20. The ONT according to claim 16 wherein the video interface comprises a DBS interface.